

ASPIRATION » **REALITY**

The demands and opportunities of agile organizations in the financial sector.

Christian Böhning Holger Friedrich Sebastian Müller Dr. Mirko Schiefelbein

August 2015 White Paper Copyright © COREtransform GmbH

1. Introduction

The finance industry is not immune to structural change. Macroeconomic political frameworks, digitalization, the competition, changing customer behavior and regulatory demands all represent enormous challenges for financial institutions. In response to this, concepts for reducing costs and complexity have been proposed and discussed in great depth in recent months. After five years supporting financial institutes with national and international transformations, we have arrived at a different conclusion.

Structural change within the financial sector can be traced back to fundamental innovations of information and communication technology (ICT) in the early 1990s. In conjunction with general economic trends, this correlation, also known as the Kondratiev cycle, results in a range of different parameters for operating within the market, including considerably shorter product lifecycles and the dependence of a competitive advantage on the usage of technological innovations in highly developed industries.



¹Starting point is typical distribution of IT budget; Assumptions: Reduction of Run the Bank (RtB) expenses (upkeep/maintenance and infrastructure/operational services) by 25%; Exhaustion of the potential of agile approaches in Change the Bank (CtB) projects with the implementation of regulatory requirements. Source: COREinstitute 2015.

Figure 1: Competition ability through higher degrees of freedom

According to our assessment, the financial sector's greatest challenge lies in conforming to the modified frameworks arising from fundamental and accelerated change. Banks must adapt to the models of agile, innovative organizations. For this, it is crucial to achieve a significantly different position in the dimensions of governance, products, processes and technologies. The development of agile and innovation skills should accompany this. Basic innovations in the Kondratiev cycle lead to fundamental change

Having identified these dimensions, we developed a five-pronged approach for how financial institutions can react efficiently, risk-focused and effectively to prepare for current and future challenges:

- > Identify and use STEM skills as a strategic lever
- > Complementing governance with agile components
- Make products more modular and adjust them for integration into dynamic value chains
- Make processes more flexible and adapt these to the requirements of increased fragmentation
- Focus more consequently on the interchangeability of IT components in technology management

With the following analysis and reflections, we wish to contribute to the ongoing and increasingly public discourse. For this, we will draw on our experience supporting in business-critical IT transformations and our extensive research activities, within the context of COREinstitute, on issues related to the finance and insurance industries. The overarching goal is to develop suitable solutions, together with industry experts, scientists and engineers, and help to ensure that decision makers on all levels retain their ability to shape their business.

2. Different framework conditions

The financial services market has been undergoing structural change since the end of the 1990s. Since 2007, this change has been intensified by the simultaneous emergence of the financial crisis, increased mobilization with instantly available computer access via smartphones, and consumeroriented software deployment processes in the form of app stores.

Examples of increasing cost pressure, the distribution of mobile devices, and the success of new business models all produce changes yet are merely symptoms of development. Only by focusing on the underlying mechanisms of action can financial institutions successfully operate within the new framework conditions. Based on this, institutions can adapt to new market conditions, deduce recommended courses of action for board members and management, and produce more concrete approaches for operating within the market.

In the following chapters, we will explain the central phenomena surrounding the driving forces of macroeconomic-political frameworks, technology, the competition, customer behavior and regulations, before describing the respective underlying action mechanisms. Focus on action mechanisms rather than symptoms

2.1 Macroeconomics and politics

Macroeconomic framework conditions are one of the driving forces of radical change in the financial sector. On the one hand, this change is due to the drying-up of hitherto stable sources of income: declining interest margins, the restructuring of branch and advisory organizations, and margin pressure due to market transparency enforced through regulation all reflect this. On the other hand, regulatory expenditure results in enormous cost pressure. This is partially further aggravated by high legacy costs. Market saturation within the German three-pillar model (publicly regulated banks, cooperative banks, and private banks) is intensified by direct banks and the emergence of FinTechs and participants new to the industry ("bank attackers"). As a result, possibilities for forwarding costs onto customers are lost and historical revenue cannot be regained without making underlying changes to operational and business models, not even through cost-reduction or complexity-reduction programs.

Accept the erosion of previously successful models



Drawing conclusions from market liberalization

Figure 2: Economic environment

The action mechanism behind these phenomena is the political desire to liberalize the market by means of opening and continually regulating the market. This liberalization increases competitive pressure between market partners and promotes new market participants by dismantling barriers for market entry that protect established participants. As a result, financial institutions are challenged to develop new sources of income and structurally reduce their costs without transferring them to consumers. This political strategy aims to produce market participants who can successfully combine both factors. An eventual market shakeout is accepted.

2.2 Technology

In increasingly rapid cycles, technological progress successively offers more and more possibilities for how people, companies and machines interact, communicate and do business with each another.

This progress is highlighted in the widespread distribution of mobile devices and their adoption by customers (Figure 3). From 2011 to 2014, the percentage of users in Germany accessing the internet via their smart-phone or tablet on a daily basis increased from 37% to 63%. During the same period, daily internet usage via PCs and notebooks decreased from 80% to 57%. Since 2014, German users therefore reach for their smart-phone/mobile device proportionately more often than for their PC to access the internet. At the same time, a profound change is taking place in terms of the type of software used: subscription models are establishing themselves alongside classic sales models, the primary distribution channel has shifted from CD programs to online apps and operation does not involve local installation, but rather cloud access.

This development is made possible by high bandwidth supply in cable and mobile communication infrastructures. The transmission rate of cable has risen from several Kbit/s at the beginning of the 1980s (BTX) to around 768 Kbit/s at the turn of the century (T-DSL), to what is currently around 200 Mbit/s (VDSL with vectoring). Similarly, the transmission rate in the mobile communication sector rose from GSM (9.6 Kbit/s) to UMTS (384 Kbit/s) to LTE (up to 1 Gbit/s). This increase in bandwidth is accompanied by the standardization of network infrastructures in the form of the expansion of broadband, IP-based digital networks as an underlying technology. This universal standardization includes all digital communication protocols (data, language, video, services) and makes it possible to reach every user without additional requirements, whereby products can be scaled extremely quickly.



Figure 3: Technological progress

Recognizing the turning point from stationary to mobile internet use in 2014

The action mechanism behind these developments lies in the exponentially increasing efficiency pressure arising from technological possibilities (Figure 3). This was rather casually formulated by Gordon Moore, in what has famously become known as "Moore's Law". This observation describes the 18-month doubling of integrated circuits at a given cost. This trend has proven to be true for over half a century of computer technology, yet is theoretically limited by physical laws. Scientific research estimates that this trend may continue during the current and, quite possibly, into the subsequent management generation. Any further continuation would demand a revolution of the technical foundation, for example through quantum computing.

The potentially far-reaching effects of this trend have long been the subject of open discourse. Some examples include issues surrounding network neutrality, security and data protection, and the economic and social challenges arising from increasingly rapid technological advancement.

Partly as a result of its usual logarithmic depiction, the exponential technological growth described by Moore's Law does not play an adequate role in the management culture of financial institutions. Management culture should adjust itself to steering exponential growth rather than constant linear development. In order to participate in technological advancement within this paradigm, it is the fundamental ability to harness and exploit technological progress that is decisive and not singular technological transformations (e.g. by means of so-called "S-curves").

2.3 Competition

The change in competition is another area where structural change in the financial sector becomes tangible. A long period of steady consolidation and concentration can be observed amongst established financial institutions in Germany, evident in the falling density of banks and branches. Simultaneously, the three-pillar model still inhibits competitiveness in the public and cooperative sectors (pillars), while globalization and harmonization (especially in the international markets) make the German financial market more attractive to foreign market participants. This is exemplified by the initiatives of the Industrial and Commercial Bank of China, HSBC and Santander.

The emergence of new participants in the financial services market, some of whom are completely new to the industry, is another characteristic of this change. With their differently structured market offerings, they address the market in the banking sectors of payment transactions, lending operations, asset management and business intelligence tools (personal financial management (PFM) in the B2C sector, analysis tools in the B2B sector of small and medium-sized companies). These solutions vary greatly, from single products to white-label approaches that largely address the consumer market but increasingly also target corporate customers (for example, e-Billing platforms). Align management culture to dynamic IT development

Attackers continue to target banking sectors



¹ The curves show the growth of selected participants based on the normalized start year 2011. The trend channel is marked by the area that is shaded white. It is calculated from the deviation of 20% or 40%, respectively, from the average and also takes into consideration the higher degree of imprecision in later phases. Reading aid: Klarna increases the transaction volume by a factor of almost 6 between 2011 to 2014. | ² Vanguard Personal Advisor Services Source: COREInstitute 2015

Figure 4: Successful competitions

Each sector includes high-growth innovators who have operated successfully and, in part, disruptively in recent years (cf. Figure 4): in payment, e.g. Klarna, Adyen, Square; in lending, Lending Club, Kickstarter, auxmoney; in asset management, Vanguard, WealthFront, ayondo; in BI-Tools, efigence, Mint. This development is not only driven by a series of market competitors, but also accelerated through a clear correlation between the success of individual participants and the development itself.

Other industries clearly outdo the financial sector regarding invested risk capital. For example, more than USD 8 billion in risk capital have been invested in the biotech industry and approximately USD 6 billion were invested in the media and entertainment industry. However, for years, the amount of risk capital invested in the FinTech sector, in startups and by attackers has increased disproportionately to the overall growth of venture capital investments, from USD 520 million globally in 2010 to USD 2.8 billion in 2014. We also observed that the number of innovators in the financial services market increased to a similar degree (cf. Figure 2, above): the increase of 187 companies in 2012 to 324 FinTechs in 2014 is equivalent to an increase of 73%.

Successful companies have managed to establish themselves as new intermediaries in the financial sector. Classically, the intermediary's function of brokering capital between need and surplus is assumed by financial institutions. Meanwhile, "meta-intermediary" operating platforms form an

CORE

intersection between clients and banks. Examples of the German market include Check24 (www.check24.de), a portal for accessing financial services; Interhyp (www.interhyp.de), an agent for construction financing; and Compeon (www.compeon.de), a platform for corporate loans.

The action mechanism of this structural change in competition is the progressive fragmentation and dissection of value chains. The isolated elements can be addressed individually, synthesized via combinatorics to form new variations, or integrated into modified value creation contexts. As financial sector products are characterized by largely digital, non-protected intellectual property, this mechanism applies on the one hand to an industry that is generally open to attack by technological means. In the past, this could easily be observed between investment banks in direct competition with each other. On the other hand, this action mechanism applies to macro-economically motivated, globally mobilized capital. Trial-and-error-approaches are getting more and more prevalent; the current and future environment of competition is being reshaped, which, in the context of a Darwinian market, influences the economic success of institutions more radically than before. In the future, even structures within the German three-pillar model that appear stable in terms of size will have to face this competition.

2.4 Customer behaviour

Customers are using the available technology to interact with financial institutes via different channels. In Germany, the use of branch and ATM structures remains constantly high (despite decreasing user frequency). Since 2012, online banking has been consistently used by a constant 75% of the German population. Significant differences can be found in the use of PCs, notebooks, smartphones and tablets between 2010 and 2014 (cf. Figure 5). While advanced-level PC use is decreasing slightly from high levels (61% in 2014) and the use of laptops and notebooks has stagnated (58%), the use of mobile devices is clearly increasing. The proportion of smartphone users in online banking has doubled to 21%, tablet use grew to 13%. The development of new devices such as wearables for use as independent channels is currently underway, virtual reality devices are technically ready to enter the mass consumer market and an online network of everyday objects within the context of the internet of things is gradually taking shape. In summary, the extrapolation suggests the stabilization of stationary devices and the further growth of other mobile devices.

An overview of the different channels usage suggests that channels are being combined rather than displaced. In 2014, individuals used an average of 2.4 internet-capable mobile devices. This highlights that the scenario of multiple usage contexts is now a reality.

CORE

Value chain differentiation is a reality

Consider multiple usage contexts as standard



¹Assumption as of 2015; annual continuation of trend by 10% Sources: D21 Initiative/TNS Infratest 2010, 2012, 2014, COREinstitute 2015; Basis: frequent use of terminals Figure 5: Use of banking channels

The terms "digital natives" and "Generation Y/Z" are used to discuss how customers are procuring and assessing data in an increasingly autonomous manner. The behavioral pattern "research online, purchase offline (ROPO)" is well known, as is the opposite pattern of acquiring information onsite and subsequently purchasing online. Customers are making use of these different possibilities for information and communication. The quick adoption of new technical standards is evidently accompanied by the heightened importance of the convenience factor. This aspect of comfort/convenience in the supply of functions and the presentation of information is essential as a new, equally important feature of interaction and is made accessible through different channels using responsive web design.

2.5 Regulatory agencies

The regulatory guidelines, which have once again been significantly expanded upon in the years since the financial crisis and are now in effect at the highest level, bind up critical resources in financial institutions.

The action mechanism of developments in customer behavior is the self-optimization of customers and users, which either cannot be influenced or can only be influenced to a small degree. This includes the optimization of time, price, social status, function, and convenience. This is not anything fundamentally new, however the different possibilities for information and action arising from technological progress and its manifestations produce new methods for optimization. Competing with data from conventional branches, advisors and the web, social media channels increasingly form the foundation for information acquisition within a context of essentially transparent markets.

Comparing 2010-12 and 2013-15, "run-the-bank" (RTB) expenses for the German banking industry have, at approximately €800 million, remained constant. However, in addition to this, vast and increasing proportions of "change-the-bank" (CTB) budgets are allocated to regulatory demands

Sustained customer selfoptimization through technological possibilities

(e.g. IFRS, BCBS, FATCA), which increased by a third from 3 to 4 billion euros from 2010-12 to 2013-15 (Figure 6). In relation to the overall size of German credit institutes' CTB budgets, the proportion of expenses reserved for meeting regulatory requirements has thereby increased from 25% to 35%. Further guidelines for the coming years have been recommended and are under discussion (AnaCredit, BCBS 248, BCBS 265). With the European institutions of the European Banking Authority (EBA), the European Securities and Markets Authority, (ESMA) and the European Central Bank (ECB), entities have been established and tasked with designing a European financial market and further international harmonization.



¹Law for adaptation of the investment tax law and other laws to the AIFM (Alternative Investment Fund Manager) implementation act | ²Regulation regarding the cross-border, automatic exchange of information Sources: KPMG, German Central Bank banking statistics 2013, BaFin, BIZ, EZB, EBA, IFRS Foundation

Figure 6: Regulatory development

The action mechanism is the implementation of improved capabilities in risk assessment and risk management within financial institutions and, simultaneously, more effective regulatory tools for enforcing regulations. The aim is to balance risk potential and regulatory leverage, in order to redress the situation experienced during the financial crisis, where regulatory agencies and civil society were at a clear disadvantage.

Guidelines encompassing financial market stabilization, government revenue optimization, market liberalization and consumer protection are undergoing substantial further development. IT is recognized as being pivotal within this context.

On the one hand, the regulator increasingly assumes the availability of relevant technology in order to fulfil the guidelines and demands that financial institutions are able to produce transparency in defined areas at all times. On the other hand, the regulator actively operates in dialogue with experts from financial institutions, IT service providers, associations and science. Regulators expected to harness the potential of technological development

CORF

3. Challenges for financial institutions

The aforementioned phenomena of increased cost pressure, the spread of new devices, the emergence of new participants in the financial services market, the demand for banking services in multiple usage contexts and the high expenditure on necessary regulatory measures are not to be confused with the action mechanisms driving trends. These are identified as:

- Strengthened political desire for market liberalization and competition by actively opening up and continuously regulating the market
- Steadily increasing efficiency pressure arising from exponential technological growth with suitable reaction patterns insufficiently embedded in management culture
- Progressive fragmentation and dissection of value chains with new market participants actively and experimentally targeting individual elements
- Customer self-optimization regarding time, price, social status, function, and convenience by using new technology and services (this either cannot be influenced at all or just to a small degree)
- Implementing improved quality of risk assessment and risk management within institutions while strengthening enforcement of regulations through supervisory authorities

Aligning management to the symptoms defocuses an institute's organization and hinders the development of valuable business potential. Instead, the structural dynamics of change in the financial sector are to be intensified by aligning institutions to the action mechanisms. Financial institutes face massive difficulties in areas where change is crucial, and it is advisable to resolve these difficulties within the near future.

The precise analysis of symptoms and causes is an essential management task. Management is to be enabled to complete these analyses; room and opportunity for developing relevant experience must be organized and provided. Initiating and accompanying this process is a primary responsibility of management and supervisory boards. Furthermore, it should be recognized that the predominant focus on costs and regulations within financial institutes results in those aspects being overvalued despite their relative irrelevance to long-term success. Here, adequate incentive structures for those responsible for operations are to be implemented. Finally, as a necessary counterbalance to legal and business competencies in the senior management of financial institutes, technology and engineering skills are to be significantly expanded upon. Five action mechanisms are responsible for structural change

3.1 Competencies

STEM competencies (STEM = science, technology, engineering and mathematics) are known to be indispensable for the continued development of business models and organizational adaptability amidst increasingly international competitors, especially in the field of high-technology and its application.

STEM skills at management level are also critical for the success of the financial sector



IT studies or previous IT position, Data pool: board directors from systemically-relevant and other large banks of the respectiv

Figure 7: STEM and IT competences

In comparison with companies from other sectors, STEM competencies are considerably underrepresented in organizations and on the boards of financial service providers (Figure 7). While STEM academics still make up 27% of the staff in the IT and telecommunications sector, 16% in the automobile industry and 9% in the field of media services, they are represented with just 5% in the financial services industry. Analyzing notable IT expertise (a completed university degree in IT or previous job experience in the field of IT) on the executive boards of banks in select countries paints a similar picture: in the USA, 12% of board directors have an IT background, in Germany 8%, in Great Britain 6%.



¹Extracts Sources: trendence 2015, Top 100 Employers in Germany, COREinstitute 2015

Figure 8: Employer attractiveness of the financial industry

Structural deficits are also evident, with HR departments lacking in efficiency when competing for candidates with skillsets critical to success (cf. Figure 8). The finance sector is unable to offer many of the factors essential for motivating graduates, such as working with cutting-edge technology, a creative working environment in a professional, non-hierarchical environment and opportunities for personal growth. The finance sector's low affinity to early, underdeveloped approach to new technologies currently makes it generally less attractive for new recruits and increases the obstacles in competing with corporate groups from other industries for these highly qualified employees.

The low degree to which STEM skills are present in financial institutions translates into structurally low effectivity and efficiency in the analysis, design and operation of IT-supported business processes. Increasingly, this applies to products as well. Nurturing these skills and embedding them into all organizational levels is therefore business-critical.

3.2 Governance

Governance structures in financial institutions widely align themselves to the paradigm of changes carried out periodically and under the assumption of static framework conditions surrounding the financial sector. Governance is still largely hierarchical and agile governance structures for complex challenges are little known. Equally rare is the existence of notable practical experience in using these agile instruments.



Limited attractiveness for those with STEM skills

Limited institutional experience with agile governance





'subget > EUR 80 million, Runtime > 2 years, > 100 employees with own leadership and decision-making structures, one (1) approval decision |? Multiple answers possible Source: Market Analysis COREinstitute 2014, Standish Group 2013, Study of the University of Göttingen together with COREinstitute 2013

Figure 9: Program and success structures

The hierarchical character of financial institutions is, aside from the long-running decision-making processes optimized for risk prevention, evident in the scarcely varying structure of change projects. It is difficult to differentiate between small, medium and large projects for these changes and projects are therefore set in the form of processes that are more universal and tend to be hierarchical. Analysis shows that 44% of

Dynamics of change rising further, current management paradigms increasingly ineffective major IT projects are terminated before completion and a further 49% are only completed with substantial deviations from scope, time or budget. The proportion of successful projects lies at a dissatisfying 7% (Figure 9). Studies and interviews have proven that a major reason for failure lies in the high complexity of programs. Reasons for complexity include, to a small extent, technological parameters and, to a greater extent, organizational factors, especially dynamics of requirements arising during the program runtime. Long project runtimes and decision-making/adaptation structures are contributing causes to failure. Ongoing attempts at previous complexity reductions are to be abandoned. Instead, methods for mastering complexity are to be developed and embedded within the organization.

Inadequate governance structures result in the inefficient use of employees and budget resources, thereby increasing the structural advantage of competitors. The urgently sought innovation potential in institutions exists, however it is usually identified in bottom-up initiatives. Executives, however, act sensitively regarding cost-income ratios and primarily optimize risk disposition. Consequently, neither the motivation of employees and partners, embodied in a company culture of employee involvement, nor corresponding investment can produce reasonable benefits. Returns from innovation initiatives regularly fall short of expectations.

3.3 Products

In light of the predicted level of competition, product management in financial institutions is insufficiently focused on developing new revenue sources and structurally reducing costs.



¹Turnover figures for banks based on gross commission incomes | ²New products = Products less than three years old, 2014 survey Source: ZEW/ISI (2015): Mannheim Innovation Panel

Figure 10: Innovation figures of the financial industry

A comparison of industries shows the financial sector as having a very limited level of innovation (expenditure on innovation in relation to revenue) (Figure 10). In 2013, while more than 10% of revenue was invested on innovation in the automotive and electrical industry and 2.4% in the media sector, financial services companies spent on average 0.5% of their revenue on innovation projects. This is a 45% reduction in comparison with the year 2000.

Products of established financial institutions do not sufficiently reflect the digital optimization pattern of their customers. Products are not, or are inconsistently, available regardless of time and place (24/7, anytime/anywhere). Value-added services such as dynamic pricing and bundling place high demands on both frontend and backend systems and their integration. In contrast with conventional concepts, few institutions integrate social media platforms for use as a new form of scoring. Currently available functions are highly standardized and can only be customized at great expense. Aspects of digital convenience can only be partially and inconsistently taken into consideration.

An underdeveloped internal innovation culture with structural obstacles to implementation dominates financial institutions, especially in the field of IT. The ongoing IT centralization efforts made by large parts of the German banking market in recent years have yielded initial cost savings and addressed synergy potentials. However, at the same time, modernized IT architectures are still largely absent. This now results in high costs being incurred for any further change. Given the upcoming technological developments, it can be concluded that these limits to adaptive capacities will grow into veritable strategic risks for large portions of the German retail banking business.

The consequence of the financial institution's position regarding the product dimension is a general tendency towards a progressive loss of customers and market share, as products cannot be adapted to provide new possibilities for customers to optimize themselves. Financial institutions are largely unable to address the ever-greater potential of digital technology and flexibly integrate their products into changing value chains.

3.4 Processes

Financial institutions currently have limited flexibility in the organization and adaptation of processes to value-creation patterns and demands due to the the tight coupling of processes to their technical implementation. Processes are rarely granular, they are inflexible and, additionally, coded rather than configured in IT systems. Adequate reaction speeds to changes in the market cannot be ensured at a reasonable expense. One reason lies in the historical alignment to local branch processes, as branches were the leading distribution channel. At branches, flexibility was nowhere nearly as highly prioritized as it is today in connection with the massive requirements of online and mobile channels.

CORE

Undifferentiated products prevail and cannot be modularized

Products do not sufficiently reflect customer expectations for self-optimization

Required process flexibility inadequately implemented thus far



Source: COREinstitute 2015

Figure 11: Comparison of expenses

More specific analyses reflect the varying setups of financial institutions (Figure 11). Within the examined context of innovation projects, estimated implementation deadlines of 8 to 15 months were sufficient for similar ranges of functions. Usually, these estimates were extended by about half a year to allow for release planning. The average total expenditure of the examined projects varied, from 0.7 to 5 million euro. The visible example of a direct bank shows that a quick finish does not depend on institution's size. The longest implementation periods and highest implementation costs can be seen amongst branch-oriented banks, whereas internet-savvy institutions boast the shortest deadlines and lowest costs.

The result of this position regarding processes is the steady loss of customers and market share, as structurally better-positioned market participants such as Apple, Google, MasterCard and PayPal can formulate offers through higher process quality and faster supply, whereas financial institutions are unable to counter with their own solutions within acceptable timeframes.

3.5 Technology

Technology management to date emphasizes costs and risk optimization. Consequently, the forming of sedimentary layers of outdated technology continues, which aggravating technological dependencies and thereby limits future business success to an even greater extent.

As early users of computing technology, financial institutions possess a technological landscape that has developed over the course of decades. For the most part, this consists of old (> 30 years: Host, Cobol, program-fetch) and middle-aged (> 15 years; client-server, C++, CORBA) technologies. Current technologies, including microservice architectures, Java and REST services, are in use to a much lesser extent. In terms of new technologies, such as the Intercloud, deep learning and Blockchain (especially as a form of cryptocurrency), little to no strategic adoption is recognizable.

Technology management is predominantly cost-focused

The ensuing complexity poses a great challenge for financial institutions in regard of modelling basic technology architecture. The high dependency on individual components and their tight integration with each other have made it the norm that interfaces are rigid and inherently inflexible. Aggravated by high costs for testing, this technical foundation requires a culture of long release cycles. Implementing a more contemporary model of robust IT-architectures, which are impervious to change and consider change as a matter of course, cannot and is not being targeted.

The consequences of this technological situation are increased expenditure on IT management for operating outdated IT infrastructures, long-term commitments to service providers resulting in less market flexibility, and defocusing limited STEM capacities for problem solving within legacy structures.

4. Approaches for succeeding in the market under different framework conditions

The current transformation within the financial services sector is not exclusively characterized by the high dynamics of change in comparison to previous industrialization periods. The latter also featured correspondingly high dynamics. Rather, and for the time being, the current transformation is characterized by the fast-growing impetus from the perspective of decision-makers. It is also a breaking-away from the idea of a stable target state that can hopefully be achieved after completing a singular transformation.

The action mechanisms described in part 2 – political desire for market liberalization, exponential and currently accelerating effects of technological development, customer self-optimization and the enforcing of improvements to risk assessment and risk management by regulators, all point to openended development, the results of which cannot be accurately predicted. If institutions are not to be exposed to this development unprepared, and management acknowledges its own responsibility for this, organizations have to acquire the ability for structural change. This ability to change will, along with many other factors, be critical to future success in a fiercer competitive environment.

The five aforementioned factors help organizations considerably improve their ability to change. They have partially proven to be effective tools in other industries.

4.1 Identifying and using STEM skills as strategic levers

Instead of focusing on risk prevention, financial institutions should aim to improve creative drive and ability. For this to succeed, it is necessary to incorporate skills combining design with risk assessment. Therein lies the risk prevention strategy to be developed in the face of structural change. Implementing this through STEM competencies is possibly a greater challenge than establishing a female quota in supervisory boards. STEM competencies are critical success factors in the continued development of business models and organizational adaptability, especially in sectors reliant on high technology. Financial institutions therefore have no other

CORE

Technology sedimentation over-proportionately drives change complexity

Prioritize STEM skills at all levels

option than to allow STEM competencies to find a company-wide application at a higher level than before and to integrate them more effectively than in the past. The goal is to thereby initiate a self-perpetuating spiral of motivation and competencies within the institution.

To implement this, impulses for action are to be initiated on various levels. An easily adaptable recruiting program is to be set up, providing the framework for competing with companies from the automotive industry (e.g. BMW, Daimler, Volkswagen), technology (e.g. Siemens, Bombardier, Bosch) and the software industry (e.g. SAP, Rocket Internet, DATEV) for STEM academics (Figure 12). This includes an employer branding initiative that is geared towards the needs of the STEM academics and targets skillsets critical to success. Financial institutions' current unpopularity is reflected in the graduate employer rankings in Germany. The highest-placed bank is ranked #47, the first insurance company #58 and just four banks and two insurance companies made it into the top 100 employers.



¹ Sorted by IT popularity | ² On the business side, the BMW group is the most popular employer with 13.1% Source: trendence 2015. Top 100 Employers in Germany

Figure 12: Increase of employer attractiveness

Furthermore, the takeover of specialized teams or small companies may be pursued with the aim of acquiring specific skills and core approaches found in complementary organizations, rather than integrating their business models or products into one's own portfolio. If necessary, this can be supported by detaching teams from consultancies or by (re)integrating individual employees out of the freelance scene.

Furthermore, human resources programs are to be used to create optimal conditions for effectively employing STEM experts according to their strengths and interests. This can be supported by forming tandems of different age groups to ensure the transfer of knowledge and a combination of momentum and experience. Overall, these measures are designed to place STEM and IT competencies in boards and institutional bodies where they will be most effective: the supervisory board, the executive board, top management level and employee co-determination councils.

Raise the quota of STEM competencies on committees

Align recruiting programs to STEM requirements

4.2 Complementing governance with agile components

The governance of institutions is still largely hierarchical. Agile management methods and process models for tackling overly complex challenges are lesser known and, as a consequence, there is limited experience in applying them.

An improved ability for structural change is to be established as a governance paradigm in institutions, with the aim of making organizations generally more capable of action and more effective. Necessary changes include various dimensions of action that, together, enable an institution to align itself to the requirements for improved agility.

In terms of the organization of change, the planning (in the sense of product, portfolio and budget planning), implementation (in processes, products, applications, systems and infrastructures), operation and provider structures are to be oriented more strongly towards agile demands.

Implementing change can systematically draw on and employ agile process models. Initially, this means turning away from program and large-scale project structures for implementing change. Instead, fragmented and less complex structures are to be established for mastering increasing complexity, as, for example, displayed in the dynamic change of requirements during project durations. Smaller projects with a duration of less than a year have a success rate of 97%, while two-thirds of medium-sized projects with a duration of less than three years are successfully completed (cf. Figure 9 above). Reversely, this means that changes should be divided into smaller, short-term changes and management methods and process models aimed at doing this should be considered more seriously in management agendas.

The potential benefits of transitioning to agile process models are enormous (Figure 13). In our reference projects, budgets were effected by at least 20% and a maximum of 67%; timescales were reduced by 27% to 63%. On average, budgets were affected by 43% and timescales by 45%.

Breaking down large project structures into smaller initiatives requires a portfolio management that, in addition to ensuring budget and deadline compliance, strives for more substantial, scope-specific project management. Furthermore, the operational structures are to be motivated to function independently, in the sense of decentralized, semi-autonomous teams.

Transferring changes to line and operational organizations is a separate subject of debate as, at this interface, an agile company that transcends run and change organization becomes possible. Thus, for example, a model that engages line units affected by changes early on can realize a different approach to organizational transformation and implementation. This model may be complemented by centralizing project planning methodology and grouping together launch management and project management methods. Integrating cost and revenue factors enables the parallel development of a cost management that takes the long view.

Take agile components in governance models into greater account

Align planning and control processes to agile requirements

Consistently target potential for agile applications



¹ Anonymized evaluation of cross-institutional transformations in the financial industry (D, A, CH) with significant agile shares Source: COREinstitute 2015

Figure 13: Benefit effectiveness resulting from agile governance

With respect to systems, agility can be improved further by overcoming division in change and run organizations through a DevOps (development & operations) approach. Merging software development and IT operations aims to replace separate entities with teams that can perform improvements and upgrades using relevant systems, application and process architectures and in an independent yet coordinated manner. The segregation of duties required by regulatory guidelines is to be analyzed in terms of its underlying demands so that these can also be fulfilled in DevOps environments.

Continued development of the supplier structure is necessary within this context and is to be converted into skill-focused, flexible pools of experts. This will result in a break away from, on the one hand, long-running factory contracts with larger structures, such as IBM, HP and Accenture, and offshore factories such as TCS, Cognizant, Infosys; on the other hand, from cost-focused freelancer pooling like, for example, Hays, GFT and Allgeier. In contrast to this, the demand-oriented use of specialists in trade-specific tasks, such as dfine and zeb; in system development tasks, such as Senacor and Axxiome; and in test and quality management tasks, such as SQS and IABG; is to be preferred.

4.3 More modular products and integration into dynamic value chains

New products, different application contexts and changing user behavior are all characteristics of the current market development. With this comes an openness to future development that is to be reflected in a more flexible approach to product and portfolio design. Today, established product management approaches are limited in their ability to ensure these increased future demands for flexibility in combining and integrating external and more dynamic value chains. Increasing modularization, establishing trial-and-error approaches and aligning product management more prominently to new customer optimization patterns are all solutions to this.

Implementing more modular product landscapes and designing shorter product release cycles will, in the future, be of greater importance within product management. At the same time, it is necessary to ensure that external products or product components can be integrated into the institution's own value chains and, vice versa, that these own products can be integrated into external value chains. By now, the technical possibilities are far more comprehensive than ability of institutions to translate them into more concrete business benefits, e.g. through REST APIs. However, value chain fragmentation will continue to progress with increasing momentum, making adaptations inevitable. Combine project and business organization through DevOps approaches

Improving the effectiveness of skill-focused experts

Raise the potential of technology through product creation and distribution

CORE

Strategic predictions regarding business opportunities will remain uncertain due to developing interrelationships. Accordingly, product management should adopt a suitable management model for optimizing risk disposition. Accepting a controlled trial-and-error approach as a valid course of action can help identify critical aspects of implementing business success early on. The challenges here can be found in cultural aspects rather than in the capabilities of those responsible. Proactive, constructive risk handling is to be deemed more important to management performance than, for example, the on-schedule execution long-term plans with limited visible business applications for the future.

Designing products and services should be geared towards the needs of customers' optimization goals. Due to the foreseeable rise of multiple usage contexts, products are always to be designed for use anytime/anywhere. Regarding pricing, widespread market transparency is to be considered more actively. Customers' status orientation in the analog and digital worlds is to be used as an instrument. Aspects of convenience and guaranteed security rank consistently high in customer surveys and different marketing contexts in the form of social media are therefore also to be taken into account. In order to meet these demands, new models and processes, such as design thinking, an application-oriented innovation approach partly developed by the Hasso Plattner Institute, should also be considered for product development.

Looking at the above in synopsis it is clear that, instead of reaching a stable target state, trial-and-error approaches based on modular conceptualization should be the leitmotif for product development. Efforts must therefore be made to ensure products can be flexibly combined with each other and integrated into increasingly digital, dynamic value creation contexts.

4.4 Make processes more flexible and adapt these to the demands of increased fragmentation

Nurture financial institutions' structural ability to change requires the establishment of an integrated, interdisciplinary agile product management process. This process should cover the entire product lifecycle, from creating a concept for a potential product, to its realization, operation and decommissioning. An iterative approach, based on the principles developed in the "Agile Manifesto" from 2001, is preferred to a linear approach. This enables continuous and repeatedly coordinated cooperation within product management, operations, IT development and IT operations. This form of cooperation has proven successful in other industries with needs similar to those of the financial sector (e.g. the music, automotive and media industries). Linear, sequential approaches with fixed gateway-points and handovers, as seen in the waterfall model and the V-model, should therefore be given less priority.

A "digital-first" approach is to be adhered to within the context of the distribution process. In this approach, digital channels are prioritized and products only subsequently adapted, or rather optimized, for conventional channels. Each point of contact to the customer is to be equipped to provide all customer-relevant information and service options. These customer contact points should be fundamentally designed to be measurable and therefore evaluable. Continuous channel-specific optimization should then be ensured, based on the available data. The management of customer

CORE

Confront forecast uncertainties with focused trial-and-error approaches

Prioritize product management for multiple user contexts instead of one-dimensional approaches

Embed digital-first as a paradigm for distribution

contact points uses this significant amount of available data, for which sensor technology is to be developed for accurate measuring and evaluation methods. Empirical data from successful market distribution, such as immaterial goods or fashion, is paving the way here.

Within this context, compliance structures and their management play a major role in ensuring the increasingly essential flexibility of processes. It is to be ensured that the respective departments exercise their responsibilities constructively in active support of transformational business and IT projects. This also applies to co-determination committees, whose distinct concerns should be integrated, to constructively support the necessary flexibility.

Simultaneously, widespread automation is to be promoted in the production process – with differentiation based on the specific role of the financial institute, e.g. the role of a distribution bank vs. production bank. In internal IT relations, a DevOps-approach can more closely interweave production and operations. There is a latent conflict between-increasingly agile software and systems development at the cost of operational processes, since the latter prioritize stability and dependability. This apparent conflict can, however, also be reduced, if not entirely avoided, through modern IT architectures.

The need for shorter release cycles in making products available to customers demands IT capabilities for implementing varying delivery speeds for individual architecture domains and combining these with varying development and operational guidelines. This can, for example, be realized through less frequent releases in specific backend domains, combined with continuous delivery in frontend domains. This symbiosis enables shorter development cycles and a shorter time-to-market, in the sense of specific business functions reaching the market faster.

4.5 Focusing technology management on the interchangeability of IT technology components

Contrary to the widely held opinion that digitalization projects in the financial sector primarily fail due to IT restrictions, more central factors have emerged that are relevant to the future business success of financial institutions. IT still remains a mission-critical component to which supervisory and management boards pay special attention. This will only increase in the future. Senior management attention aside, other factors have been identified as levers with which IT management can contribute to handling structural changes, enhancing business benefits and thereby making institutions more competitive.

IT management should be more consistently focused on the exchangeability and interchangeability of technology components than ever before. The self-optimization of ecosystems between manufacturers of legacy technology and sourcing partners' business structures has produced immense legacy complexity that limits potential and stands diametrically opposed to future agile requirements. Attempts to eradicate these legacy structures through direct transformations are complex, expensive and associated with high operational risk.

Instead of searching for a solution through major projects, it is necessary to

CORE

Make compliance structures and their management flexible

Vary IT delivery speeds

Ingrain the paradigm of interchangeable IT components

Dissolve internal and external legacy ecosystems

Eliminate CtB investments in technologies older than 20 years

progressively drain out existing legacy technologies. Ecosystems aiming to profit by optimizing legacy structures are to be broken up and, preferably, eliminated. This includes technology providers with maintenance contracts for technologies that entered the market more than 20 years ago (e.g. Betasystems, Software AG and IBM), the reduction of long-running, outsourcing contracts (e.g. with Accenture, HP and IBM) solely aimed at cost-cutting and the modification of internal IT organizations that manage these ecosystems. The same approach is to be implemented for self-developed business-critical systems. Furthermore, it should be generally acknowledged and sustained that change-the-bank (CtB) budgets are allocated to technologies older than 20 years as little as possible.

Focusing on the fundamental interchangeability of technological components especially affects the choice of IT architecture models. These should be as robust and resilient as possible. This approach does not target direct stability in the sense of inner inalterability, but rather assumes change as a rule and regards a system's ability to adjust to and absorb change as integral. Based on this principle, outdated technologies are to be phased out and replaced with modern alternatives, while new technologies are to be identified and analyzed for possible application and piloted. This can be implemented through a technology pipeline or technology backlog, into which, analogous to the backlog concept in agile software development, technologies to be verified and realized can be incorporated with a flexible yet calculable timescale for implementation.



Figure 94. In Eaver State the Smart Silo approach

Predominant IT architecture models call for standardizing implemented technologies horizontally, according to application, database, operating system and infrastructure layers. This can be further developed into a smart silo approach (Figure 14), allowing for greater flexibility without negative cost impacts. Further development is currently focused on the application layer, but is hindered by the interlocked lifecycles of the layers of under-lying technology. In contrast, the smart silo approach employs virtualization technology and app containers to decouple individual applications from one another. This results in technological components that are, in principle, separate from one another and can be exchanged independently of one another. This in turn enables the gradual modernization of technologies, making it possible to participate in the gains of efficiency arising from the technological development described in Moore's Law.

Resilience as a paradigm for modern IT architectures

Replace horizontal standardization with smart silo approaches

CORE

Additionally, a skill-focused delivery structure for sourcing is necessary to achieve more flexible technology management. As shown, this includes the departure from both long-running strategic partnerships (onshore and offshore) with high contract volumes and regular re-specification, and from fixed-cost freelancer pooling. In contrast, experts should be engaged according to demand. This approach is to be accompanied by models with a proven track record in other industries that determine development and delivery partnerships through differentiated role models to balance the goals of flexibility, innovation and cost efficiency.

As a result, this enables financial institutions to counteract the development of new, even more complex legacy structures, ensure a balance between cost efficiency and necessary flexibility in IT architectures and profit more strongly from technological progress through shorter, varied renewal cycles.

5. Summary

The often-cited and well-known symptoms of digitalization are the result of a limited number of causal action mechanisms. It is essential to understand the core of these mechanisms and critically reflect upon the position of each respective institution when regarded against this background. Experience from other industries has shown us how quickly the development of new technological potential can force radical and partly disruptive change. To secure the future market position of financial institutions, it will be crucial to consistently develop an improved level of agility. Consistency and impetus must be facilitated by the management structures.

We are observing considerably different approaches by institutions in the German financial industry with regard to timing, scope and management participation in relevant initiatives. Initial management discussions require a timeframe of approximately one year; the first wave of change within the institutions, applying the levers, takes two to three years. Significant and widely effective results might be achieved by the majority of financial institutions by 2018. Institutions already producing results today took their first steps 3 to 5 years ago.

In our opinion, responsible executives must aim to initiate this process, which takes several years to complete, immediately. Existing initiatives should be driven forward with vigor, and with regard to the aforementioned levers. This must be implemented gradually and needs to result in a permanent transformation process towards improved agility. It is therefore essential that relevant decision-makers within management begin a direct exchange with their operational management regarding the action mechanisms and that, together, they develop approaches, objectives and development paths for their institution. The higher up within the hierarchy this exchange is being initiated, the more momentum it will gain and the greater its effect within the organization.

Motivated by time, this involves opting for a much more chance-based, trialand-error approach than has ever been seen in the culture of financial institutions and their governance structures. Using incremental methodology, agility can be achieved throughout the organization. The transformation does not result in a new, fixed-state institution, but rather a paradigm of continued development, innovation and openness to new interaction possibilities that will emerge as the institutional standard of the financial sector. Reflect the position of individual institutes regarding action mechanisms

We therefore advise creating workgroups in five dimensions:

- > Identifying and applying STEM competencies for realizing strategies
- > Supplementing governance with agile components
- > More modular products to be integrated into dynamic value chains
- > Making processes flexible and adapting these to the requirements of increased fragmentation
- Focusing technology management more consistently on the interchangeability of IT technology components

These workgroups will – preferably in a nonhierarchical way – work out the potential consequences of risks and opportunities in order to derive conclusions for operational management.

Provided suitable representatives from supervisory boards also join this discussion and accept that the aforementioned action mechanisms shape realitymoreprofoundlythantheusuallyexpected cost-reduction or complexity-reduction programs, then in our view the institutional opportunities will far outweigh the risks in actively shaping this fundamental transformation of the financial sector, both for individual institutions and the German credit industry as a whole.

Levers in five dimensions help to create the necessary degree of freedom for financial institutions

Authors



Christian Böhning is managing director of CORE. Previously, he was responsible for international projects at globally operating software providers and management consultancies. He has many years of experience leading technology-driven transformations in the financial sector. His work includes IT modernization programs, implementing compliance initiatives and reorienting IT organizations.

Christian Böhning

Holger Friedrich



Holger Friedrich is managing director of CORE. Previously, he worked in leading positions at technology and consulting companies. He has many years of international consulting experience in the technology and banking sectors. The focus of his work is the IT transformation management of banks and financial service providers, as well as strategic communication.



Sebastian Müller is a transformation director at CORE. He previously worked in the electronics industry and at renowned consulting firms. As an advisor, he has many years of experience managing the technology of banks and insurance and telecommunications providers. The focus of his work lies in managing agile transformations, especially IT optimization strategies through modern technology paradigms.

Sebastian Müller



Dr. Mirko Schiefelbein is a transformation manager at CORE. He has a doctorate in philosophy from the Friedrich Schiller University, Jena, and profound methodological expertise in managing IT complexity with regard to the progressive use of technology. He uses his interdisciplinary research experience in his consultancy work to particularly great effect.

Dr. Mirko Schiefelbein

About COREinstitute

COREinstitute researches the dynamics and systematics of complex IT transformations in various industries. In a framework of specialist events together with industry experts, scientists, and engineers, COREinstitute develops solution approaches for organization and management of business-critical transformations. COREinstitute makes a selection of results of its interdisciplinary research available to the public through lecture series and publications.

Disclaimer

The logos depicted are the property of each of the respective companies. COREtransform GmbH does not own any rights to the logos and uses these exclusively for scientific purposes.

COREinstitute Am Sandwerder 21-23 14109 Berlin | Germany www.coreinstitute.org Fon: +49 30 26344 020 office@coreinstitute.org

COREtransform GmbH Am Sandwerder 21-23 14109 Berlin | Germany www.coretransform.com Fon: +49 30 26344 020 office@coretransform.com COREtransform GmbH Limmatquai 1 8001 Zürich | Helvetia www.coretransform.ch Fon: +41 43 210 9675 office@coretransform.ch